Proposed frequency swap for W9RH, 147.045 and WB0AFB, 145.390 Milwaukee
By Dave Karr, KA9FUR, WAR Frequency Coordinator
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Overview

David Felland, WB0AFB, is the Chief Engineer at Channel 10/36, Milwaukee Public Television, and has the unique opportunity to relocate his repeater from its existing location at 500' AGL to upwards of 1100' AGL. The system, as it exists today, is somewhat short spaced with the W9CCU, Glen Ellyn, IL, repeater. An increase in antenna height without a change in output power would clearly present additional coverage overlap problems.

In looking at possible alternative frequencies for this repeater, it appears that swapping pairs between W9RH on 147.045 and the WB0AFB repeater appears to offer a viable solution.

Proposed Solution

The W9RH repeater has always been a relatively low profile system operated by the Milwaukee Radio Amateurs Club. Recently this repeater moved from the home of W9PWG to a location north of there on top of a 7 story office building owned by Eaton Corporation. MRAC has made me aware that Eaton will likely close this facility within the next two years and they will be seeking an alternate location within the area. It is unlikely that they will find a location that would provide better coverage than the 500' elevation that WB0AFB currently enjoys.

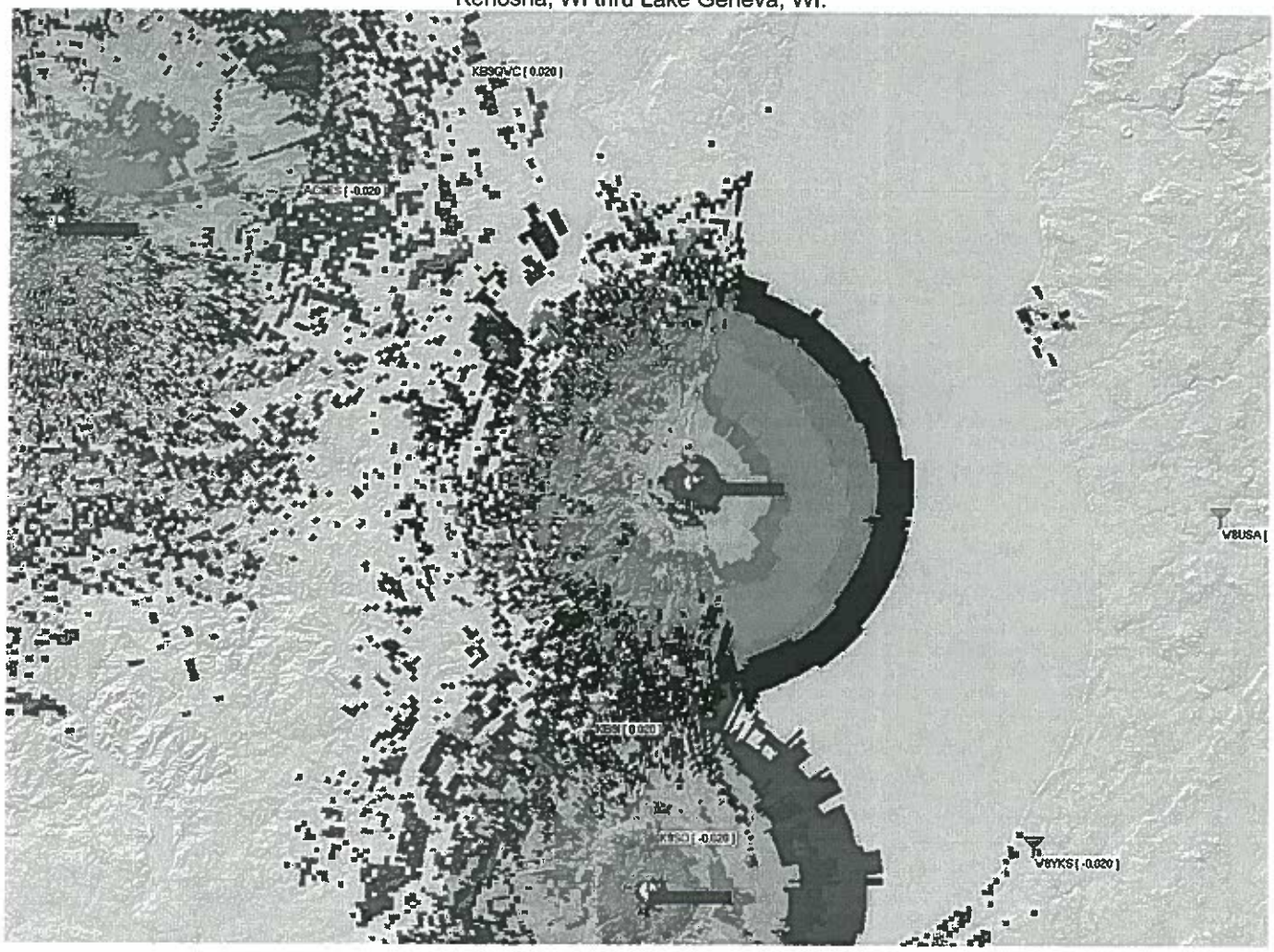
The 147.045 pair only has one co-channel occupant within 120 miles, and that occupant is operated by KB9DBG in Oregon IL. This incumbent repeater is coordinated with an antenna height of 130' and an ERP of 60W.

The coverage contour charts that follow show coverage down to –105dBm for a typical mobile station. Using these model parameters has typically resulted in coverage maps that err on the side of being optimistic. Also note that the model will show hilltop coverage where it exists and also does not take into account urban factors such as tall buildings, thus coverage will tend to err on the very optimistic side within the Chicago area, and align fairly well in the rural areas of Wisconsin.

To improve clarity, the system's depicted within each graph utilize a range of colors that extend from violet/red to blue, while the incumbent systems are shown with the reverse color scheme extending from blue to violet.

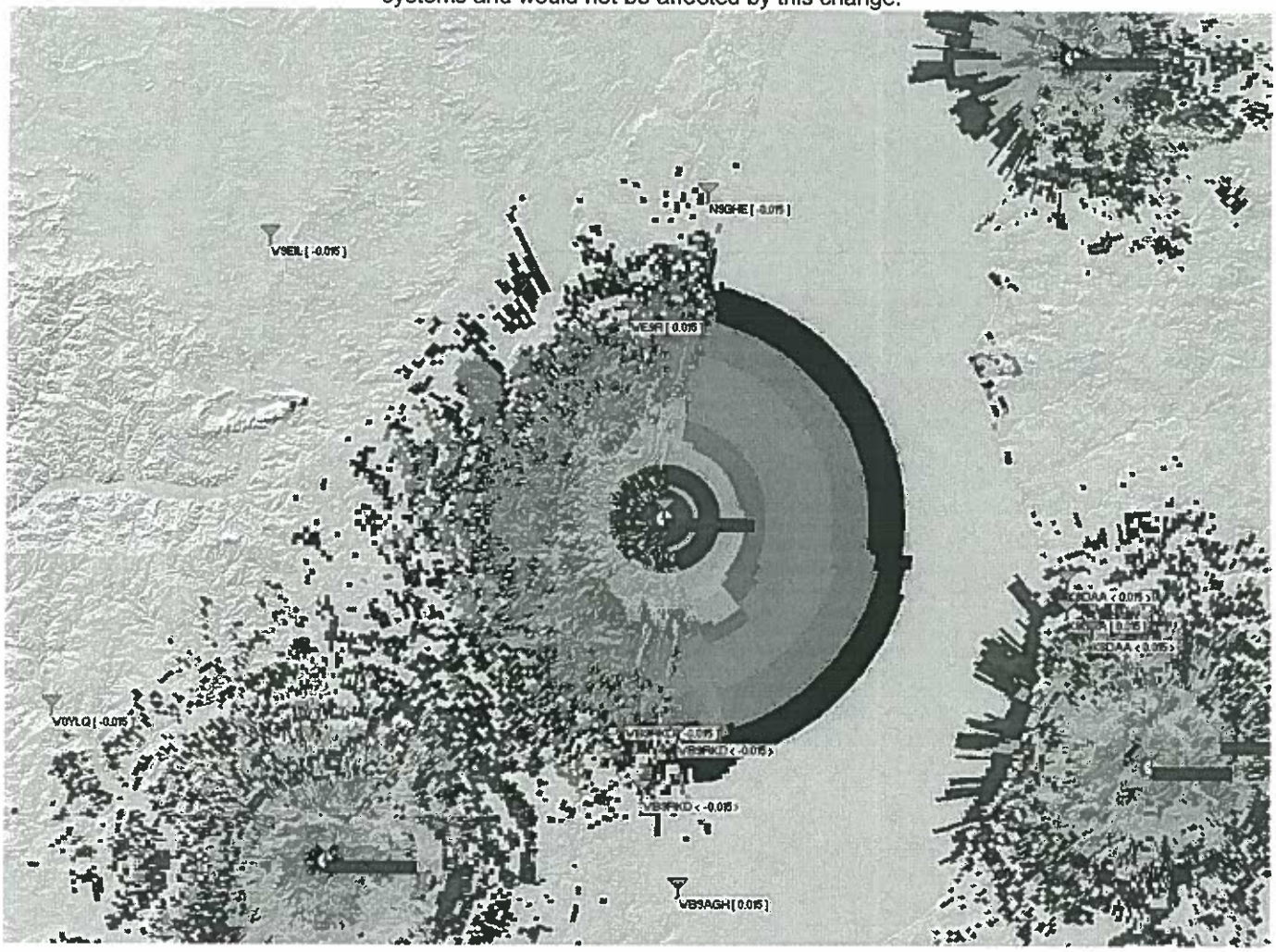
WB0AFB existing coverage on 145.390MHz

The overlap of the W9CCU and WB0AFB systems appears on these maps along a line running from approximately Kenosha, WI thru Lake Geneva, WI.

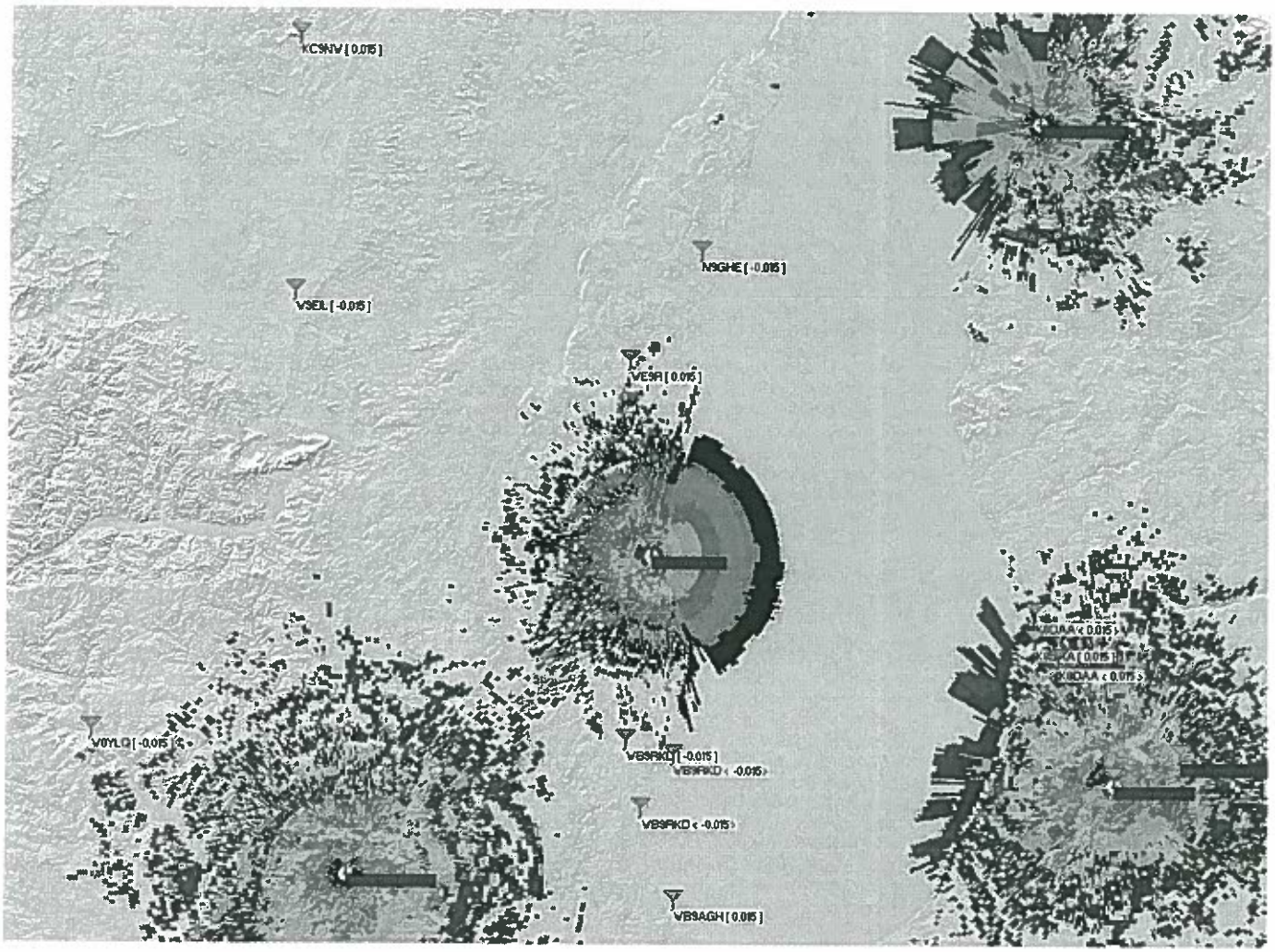


WB0AFB coverage on 147.045MHz after antenna height change to 1100' AGL

The predicted coverage of the new system shows some minor mutual hilltop coverage areas shared with KB9DBG along a line running from approximately Janesville, WI through Harvard, IL and Woodstock IL. Because of the large occasional coverage area's shared by both systems, it is unlikely that either system would have mobile users trying to access either of the systems within this region. Also note that the 5kHz adjacent channel systems in Michigan are also very low profile systems and would not be affected by this change.



W9RH existing coverage on 147.045


KC9NV [0.015]
N9GHE [-0.015]
V3EL [-0.015]
VE9R [0.015]
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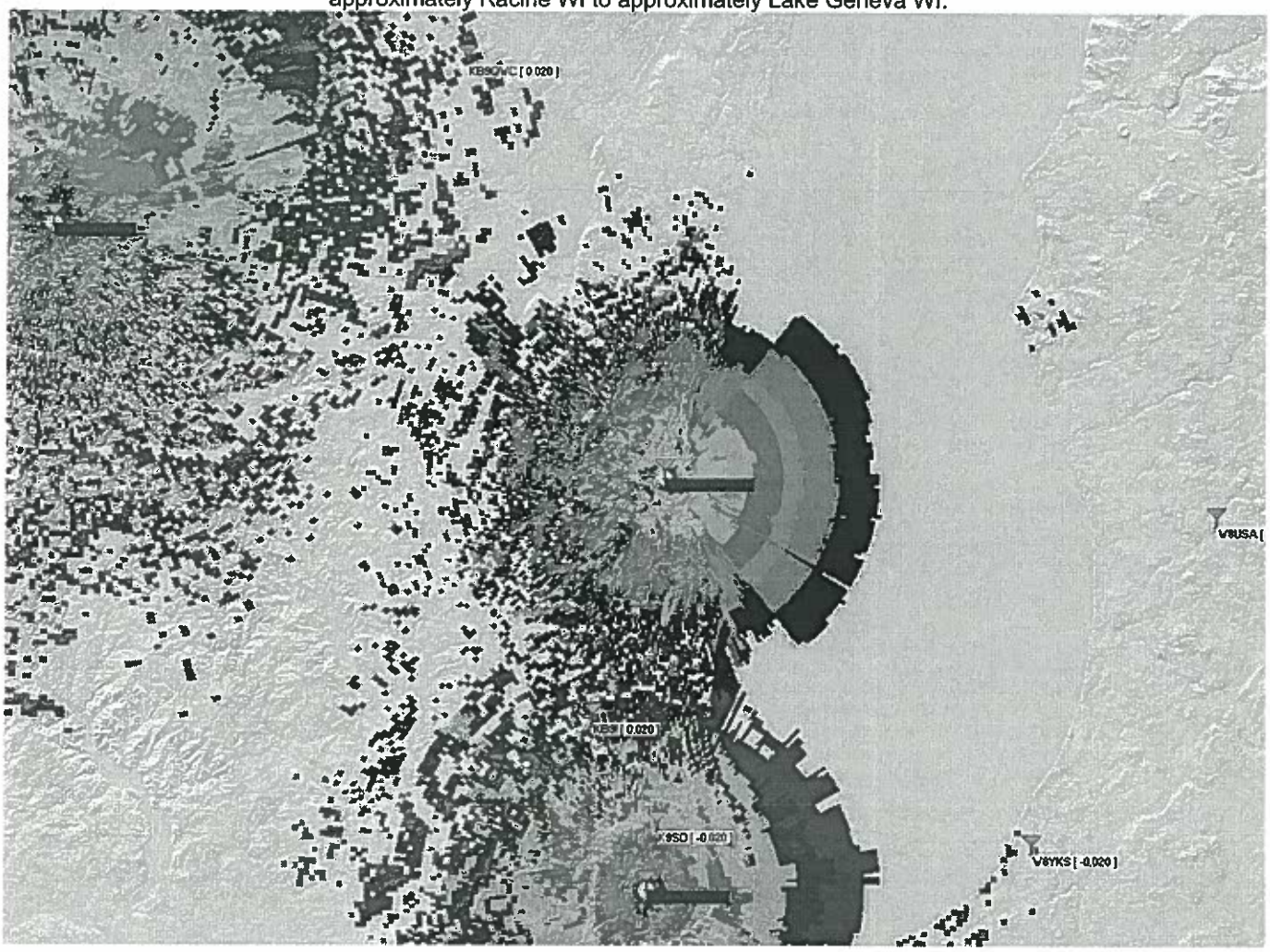
VE9AA < 0.015 >

W9RH coverage after relocation to 145.390

As W9RH and WB0AFB are only about 4 miles apart, clearly an antenna height reduction of about 400' has a dramatic (positive) affect to the W9CCU system in IL. Again the occasional mutual coverage area extends along a line from approximately Racine WI to approximately Lake Geneva WI.



Summary

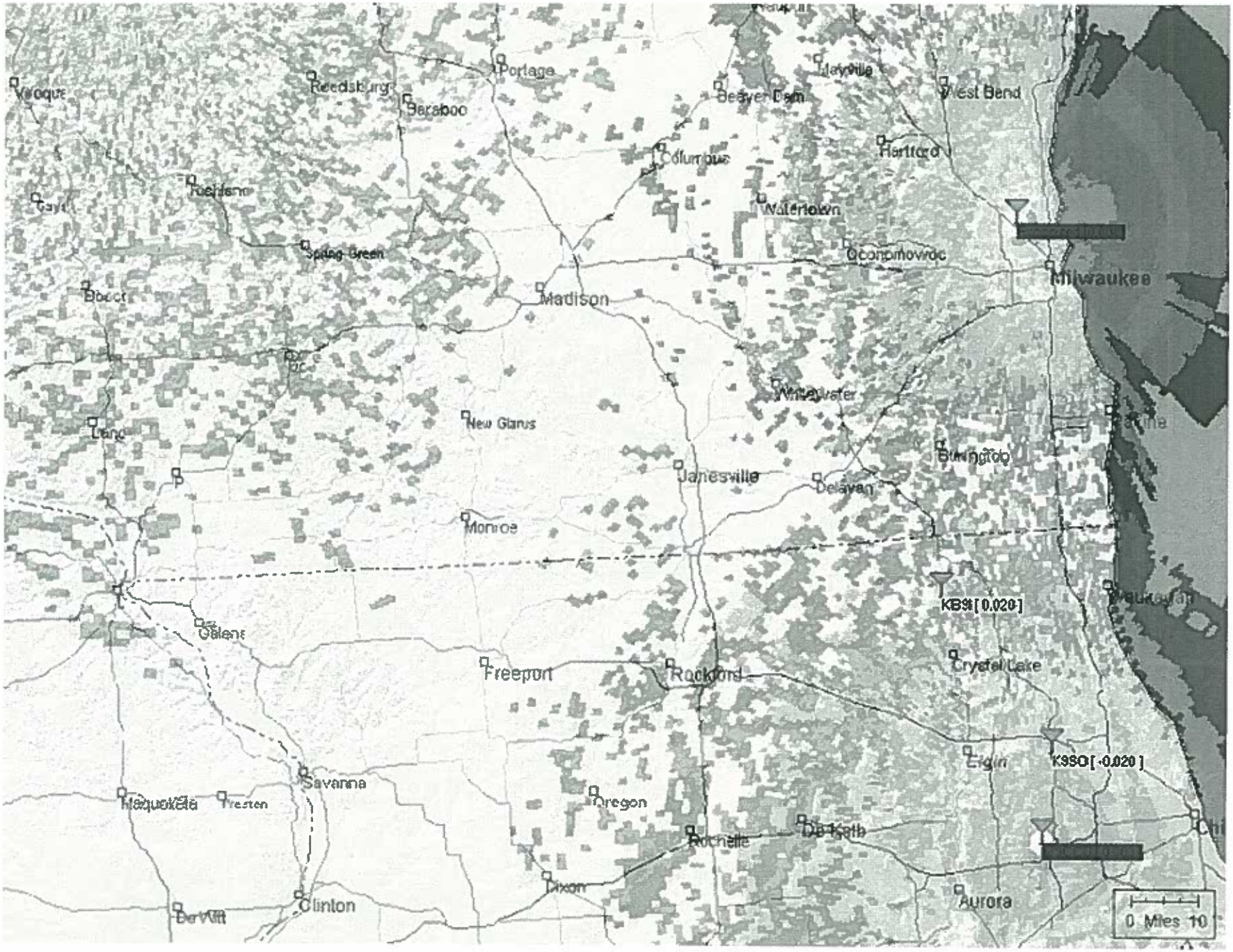
The pair swap has positive benefits for the amateurs of Milwaukee in that it yields what should be the widest coverage area repeater in the metro area.

On paper it appears that W9RH will be negatively affected by the pair swap, but I would once again point out that the computer models I'm using tend to err on the optimistic side of things. MRAC's desired coverage area is within the metro Milwaukee area, and their user base would not normally extend to the area shown to be within the overlapping region.

Any interference that W9CCU presently incurs would be significantly reduced.

The only potential negative is with the incumbent KB9DBG operation. However, even the optimistic models show only some occasional hilltop areas in the Janesville area to be an area of overlap between WB0AFB and this system.

I would hope that everyone involved will be willing to participate in making this proposed change a workable solution.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Reedsburg
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Beaver Dam
West Bend
Hartford
Columbus
Waterlown
Oconomowoc
Milwaukee
Spring Green
Madison
New Glarus
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Delavan
Monroe
Freeport
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Savanna
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Dixon
Aurora
Clinton
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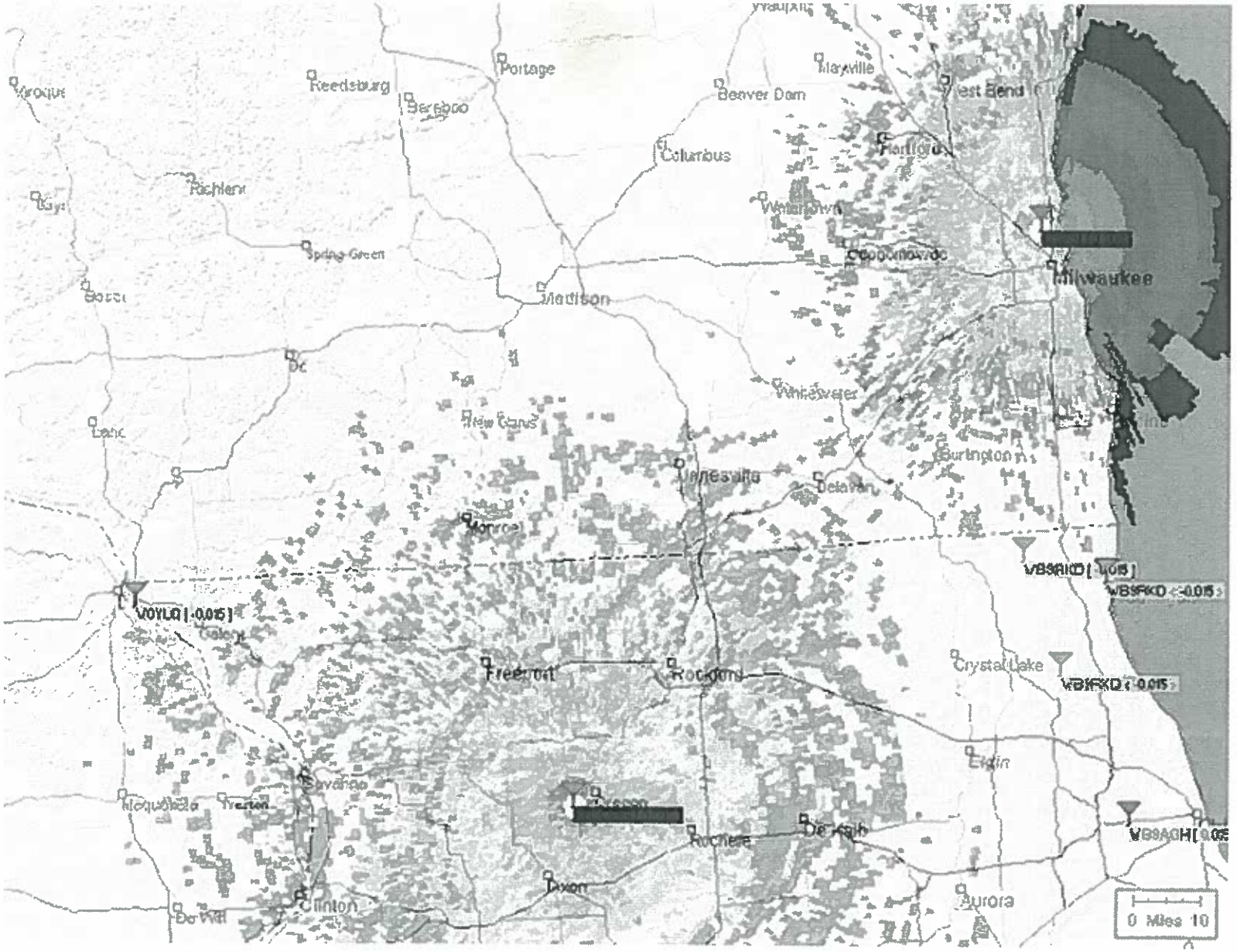
Portage
Reedsburg
Baraboo
Beaver Dam
Mayville
West Bend
Columbus
Richland
Spring Green
Madison
Milwaukee
Whitewater
New Glarus
Monroe
Janesville
Delavan
Burlington
VB9RKD [-0.015]
VB9FKD [-0.015]
V0YLQ [-0.015]
Freeport
Rockford
Crystal Lake
VB9FKQ [-0.015]
Elgin
Rochelle
DeKalb
Dixon
Clinton
Aurora
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